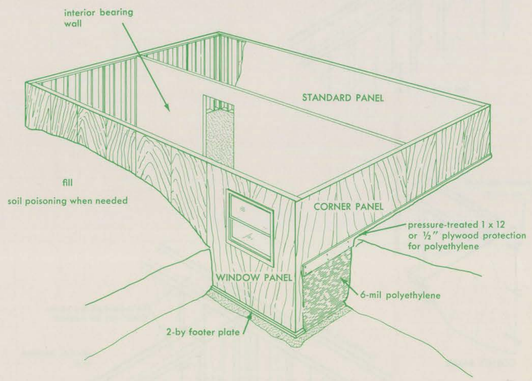
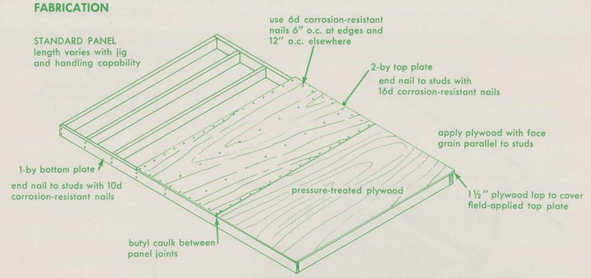
A PRESSURE-TREATED WOOD FOUNDATION FOR A BASEMENT HOUSE—FABRICATION

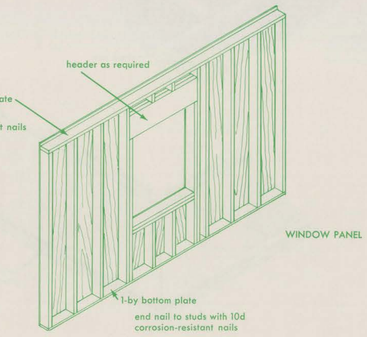
BASEMENT SYSTEM

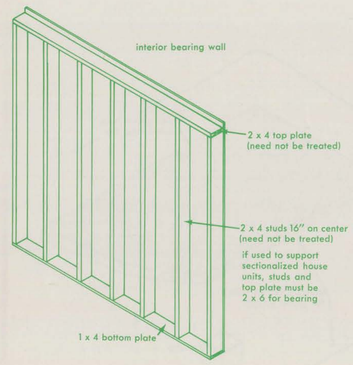


FABRICATION

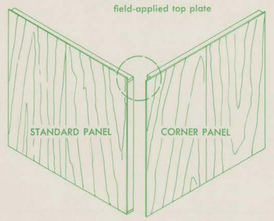


stud and plate size varies with soil conditions — see design tables





Note: Plywood lap on corner panel is equal to stud depth plus plywood thickness on standard panel. Extra stud field-applied to standard panel to provide support for interior finish.



DESIGN CONSIDERATIONS

All design and construction criteria shall conform to NFPA Technical Report #7 (National Forest Products Association, 1619 Massachusetts Avenue, N.W., Washington, D.C. 20036).

Soil Conditions

This foundation system is designed for use only when the bearing capacity of the undisturbed soil is 2000 pounds per square foot or more, and the equivalent soil pressure does not exceed 30 pounds per cubic foot.

MATERIALS

Preservative Treatment

All lumber and plywood used in the foundation must be pressure treated unless specified otherwise. The treated material shall bear the quality mark of the American Wood Preservers Bureau to indicate treatment in accordance with their LP-22 Standard and NFPA Technical Report #7.

Lumber

All lumber used in this foundation shall be graded in accordance with recognized grading agency rules and shall be stress-rated as specified in the table of minimum structural requirements. After treatment, all lumber and plywood shall be redried to a maximum moisture content of 19%.

Plywood

All plywood used in this foundation shall be grade-stamped in accordance with recognized grading agency rules. See Table 2 for plywood specifications.

Plywood panel joints in the foundation walls shall be caulked with a butyl sealant and plywood foundation sheathing below grade shall have a 6-mil polyethylene covering on the exterior face, with a minimum of 6" lap at all joints. All joints and the top edge of the polyethylene shall be completely sealed with Flintkote Adhesive #746 or an approved equivalent.

TABLE 1. MINIMUM STRUCTURAL REQUIREMENTS

House width (feet)	Number of stories	Height of fill (inch)	30 lbs. per cu. ft. soil pressure: Species & grade of lumber required[1]	Stud & plate size (nominal)	Stud spacing (inch)	Size of footing (nominal)
24 to 28	1	24	C	2x4	16	2x6
		48	B	2x4	12	2x6
			C	2x6	16	2x8
		72	A	2x6	16	2x8
			B	2x6	12	2x8
		86	A	2x6	12	2x8
	2	24	B	2x4	16	2x8
			C	2x4	12	2x8
		48	C	2x6	16	2x8
		72	A	2x6	16	2x8
			B	2x6	12	2x8
		86	A	2x6	12	2x8
29 to 32	1	24	B	2x4	16	2x8
			C	2x4	12	2x8
		48	C	2x6	16	2x8
		72	A	2x6	16	2x8
			B	2x6	12	2x8
		86	A	2x6	12	2x8
	2	24	B	2x4	16	2x8
			C	2x4	12	2x8
		48	C	2x6	16	2x8
		72	A	2x6	16	2x8
			B	2x6	12	2x8
		86	A	2x6	12	2x8

TABLE 2. PLYWOOD REQUIREMENTS

Height of fill (inch)	Stud spacing (inch)	Face grain parallel to studs — 30 pcf soil pressure: Grade*	Minimum thickness	Identification index
24	12	B	1/2	32/16
	16	B	1/2	32/16
48	12	B	1/2	32/16
	16	A	5/8	42/20
		B	3/4	48/24
72	12	A	1/2	32/16
		B	5/8	42/20
	16	B	3/4	48/24
86	12	A	5/8	42/20
		B	3/4	48/24

[1] Species and species groups having the following minimum properties

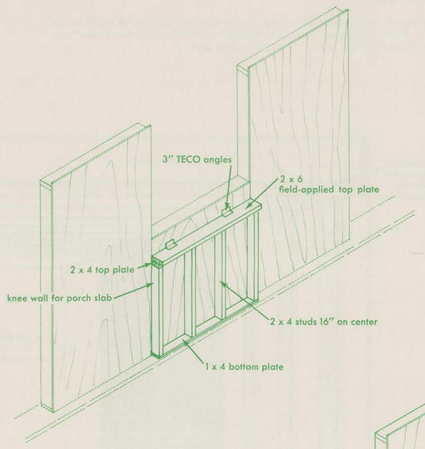
		A	B	C
F_b (repetitive member) psi:	2x6	1750	1450	1150
	2x4	—	1650	1300
F_c psi: 2x6		1250	1050	850
2x4		—	1000	800
$F_{c\perp}$ psi:		385	385	245
F_v psi:		90*	90	75
E psi:		1,800,000	1,600,000	1,400,000

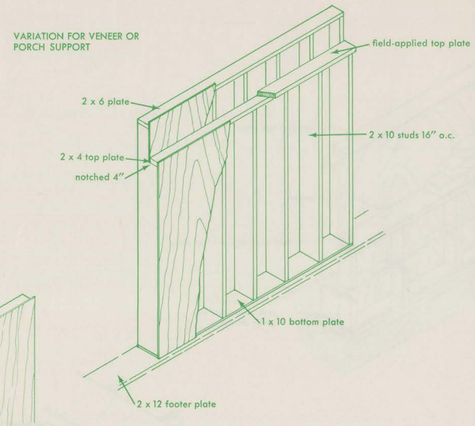
* Length of end splits or checks not to exceed width of piece.

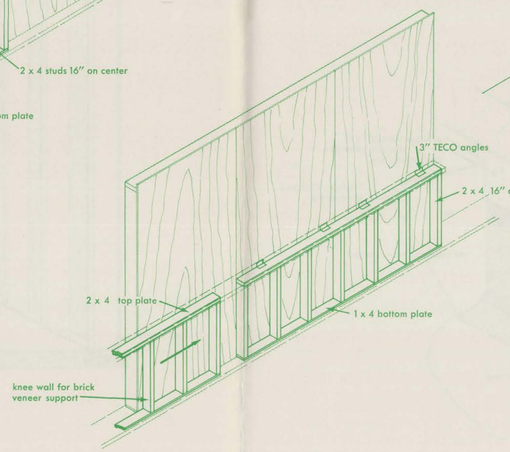
[2] Panels which are continuous over less than three spans (across less than three stud spacings) require blocking 2 feet above bottom plate. Offset adjacent blocks and fasten through studs with two 16d corrosion resistant nails at each end.

[3] Minimum grade: A STRUCTURAL I C-D; B STANDARD C-D (Exterior glue) (All panels 5 ply minimum)

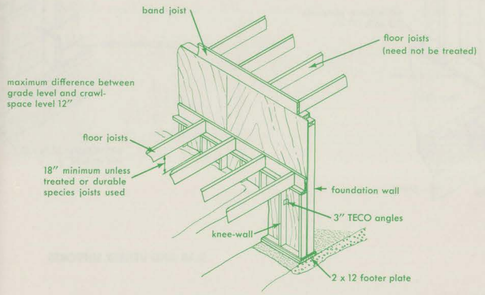
SLAB AND VENEER SUPPORTS







BASEMENT-CRAWL SPACE JUNCTION

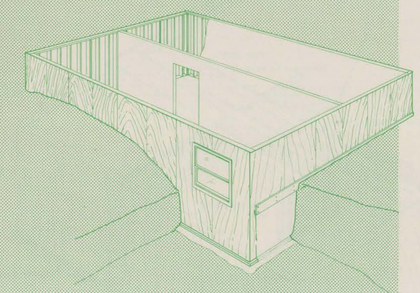


ADDITIONAL INFORMATION

For details and variations necessary for special conditions, write to American Wood Preservers Institute, 1651 Old Meadow Rd., McLean, Virginia 22101 or to the Small Homes Council–Building Research Council, University of Illinois at Urbana-Champaign, One East Saint Mary's Road, Champaign, Illinois 61820.

AN ALL-WEATHER WOOD FOUNDATION FOR A BASEMENT HOUSE

INSTRUCTION SHEET #31



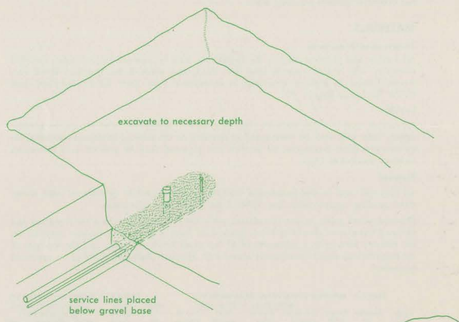
SMALL HOMES COUNCIL–BUILDING RESEARCH COUNCIL
UNIVERSITY OF ILLINOIS, URBANA, ILLINOIS

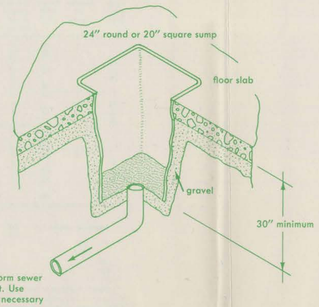
This instruction sheet is prepared as an information service of the Small Homes Council–Building Research Council of the University of Illinois at Urbana-Champaign under the sponsorship of the American Wood Preservers Institute and the National Lumber and Building Materials Dealers Association. The wood foundation system was developed by the National Association of Homebuilders Research Foundation, Inc. under the sponsorship of the American Wood Preservers Institute, The National Forest Products Association, and the Economics and Marketing Division of the U. S. Forest Service.

Price: 50 cents

A PRESSURE-TREATED WOOD FOUNDATION FOR A BASEMENT HOUSE—ERECTION

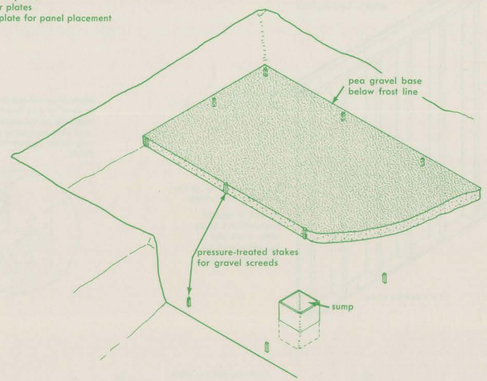
UTILITIES





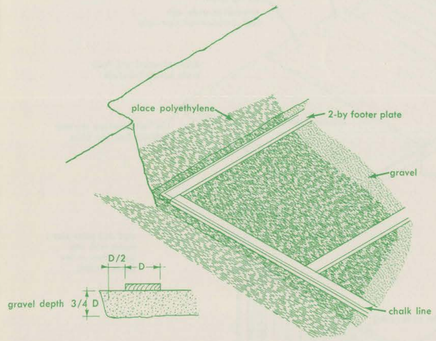
EXCAVATION AND PLATE LAYOUT

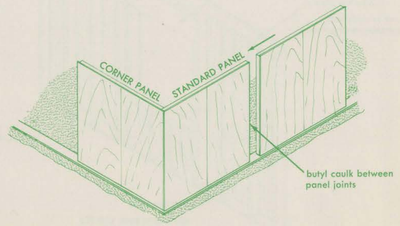
- excavate for footing
- place and level pea gravel
- position polyethylene
- lay out footer plates
- chalk footer plate for panel placement



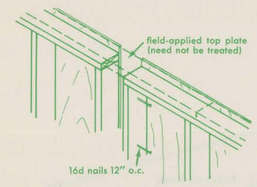
ERECTION SEQUENCE

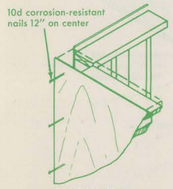
- set corner panel
- set standard panel
- caulk panel joints
- nail panels to footer plates and to each other
- set subsequent panels
- apply top plate so joints do not match panel joints

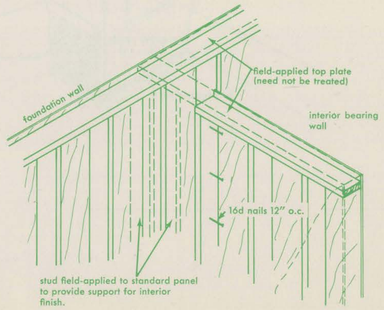




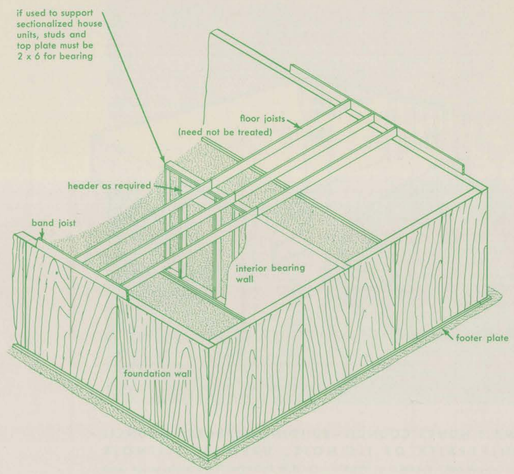
JOINING AND ASSEMBLY



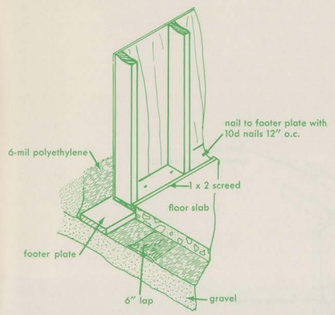


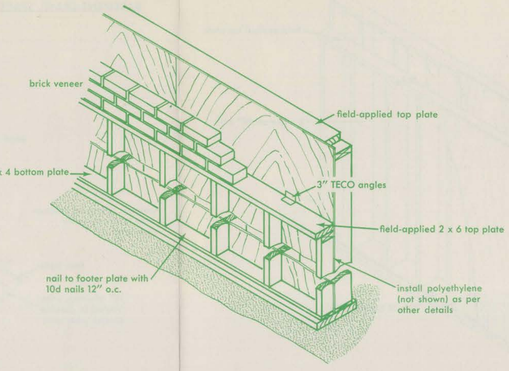


BEARING WALL DETAIL

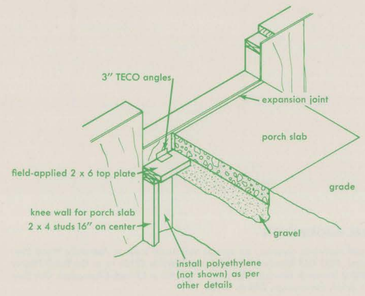


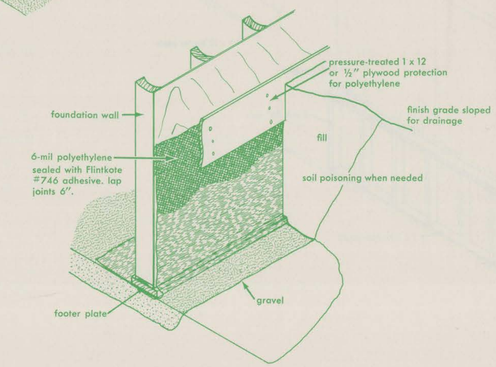
MASONRY DETAILS





SLAB AND VENEER SUPPORTS





INTERIOR FINISH

Interior finish is not a required part of the foundation system but may be added by the builder or buyer. If batt-type insulation is installed, it should be of a water-resistant type and should extend at least two feet below the outside grade.